國立中興大學

物聯網應用與資料分析

期末專題報告

手機智能門鎖

日期：2017 年 1 月 9 日

專題名稱: 手機智能門鎖

動機與目的：物聯網來臨，很多開發商品都從生活上 啟發，智慧家居是趨勢，目前市面上有很多智能插 座、智能電器，透過網路操作及監控，以解決生活大小事的不方便。隨著科技的發展、智能家電慢慢走向普及化、沒帶鑰匙出門也可以不用慌張。家裡沒有人也不用怕遭小偷，24HR 監控。在家出門卻不知道郵差、或好朋友曾經來訪過

關鍵技術：

ARDUINO 開發與各項元件之間的連結與控制。WIFI 模組的通訊傳遞，透過 Server 端的建構與 DataBase 做資料的溝通與 Android APP 的設計。

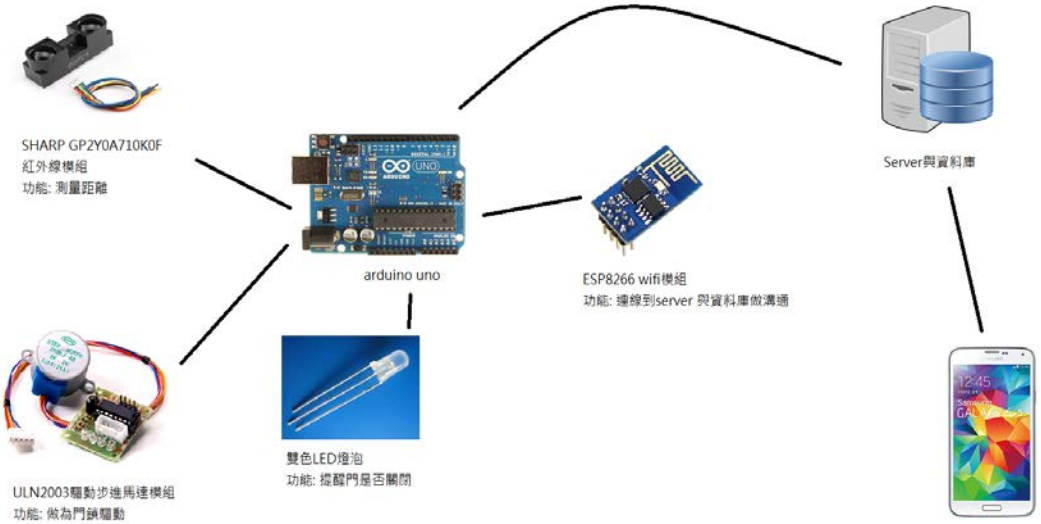


圖 1　總架構圖

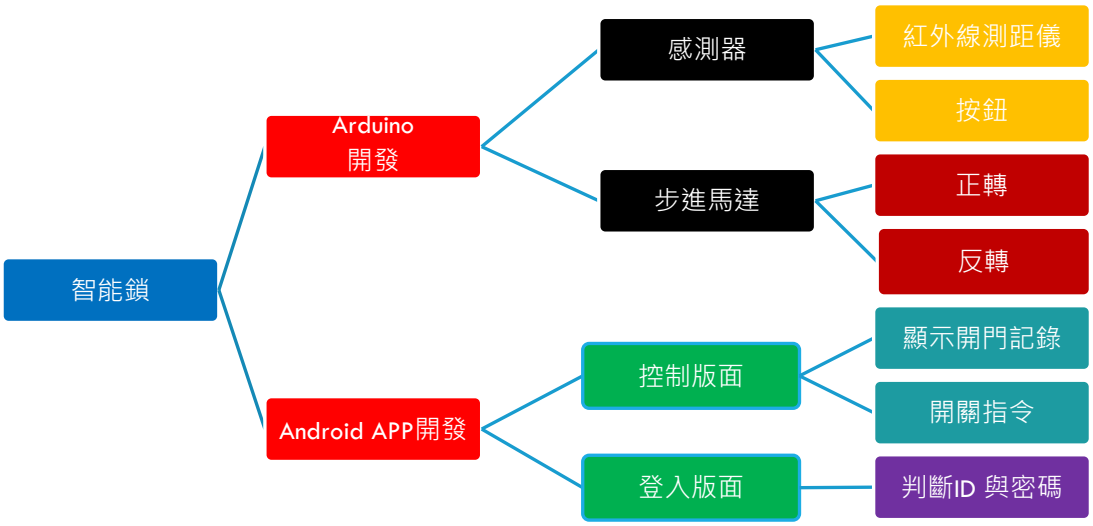


圖 2　流程圖

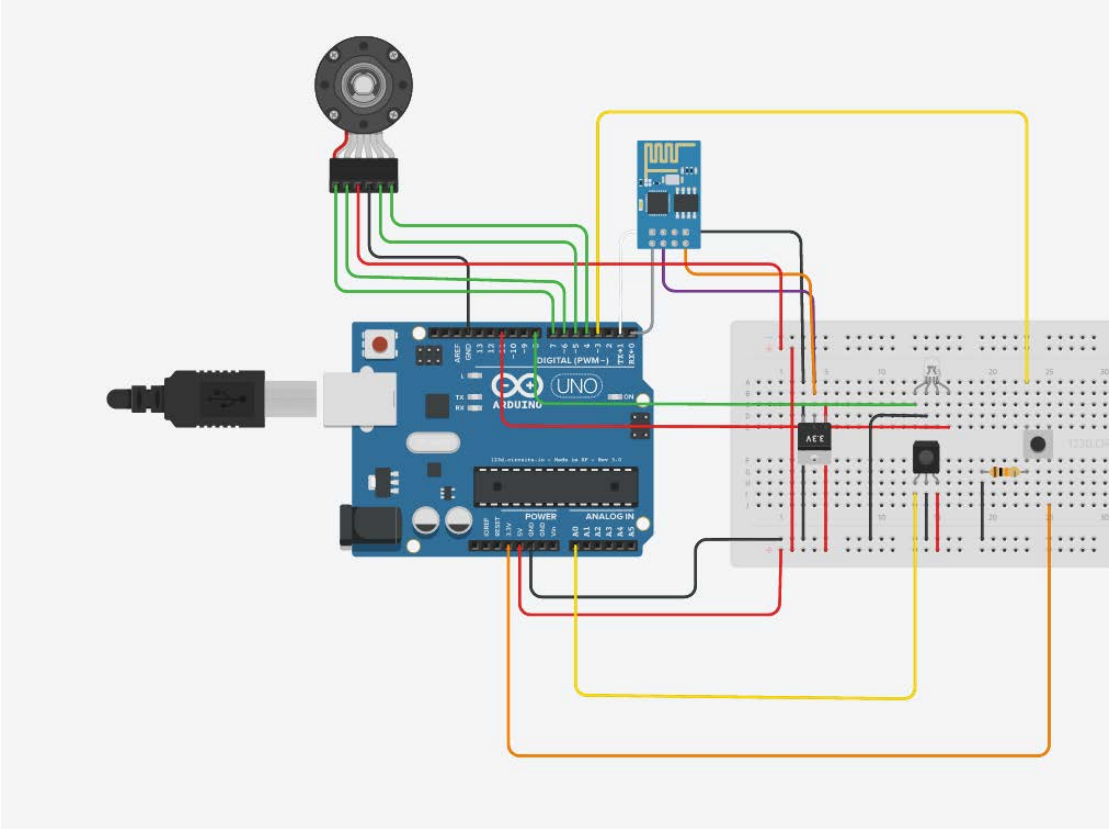


圖 3 Arduino 電路設計

Arduino 程式碼：

```
#include <Stepper.h>
#include "pitches.h"


#define pin A1

int LED = 11;

//判斷變數
String isLockOpen = "0";
int isDoorOpen = 0;
int btnStatus  = 0;

//步進馬達之變數
Stepper stepper(360, 7, 5, 6, 4);
int d=-1080;
int count = 0;
int time=0 ;
int isStart =0;
//connect
String SID = "D701";
String PWD = "d701d701";
String IP = "140.120.101.95";
String doorfile = "appControl/door_receive.php";
String lockfile = "appControl/lock_check.php";
String lockupdatefile = "appControl/lock_update.php";

char inString[32]; // string for incoming serial data
int stringPos = 0; // string index counter
boolean startRead = false; // is reading?
//=================== stepup ======================
void setup() {
    // enable debug serial
    Serial.begin(115200);
    pinMode(LED, OUTPUT);
    pinMode(8, OUTPUT);
    digitalWrite(LED,HIGH);
    delay(500);
    digitalWrite(LED,LOW);
    delay(500);
    pinMode(2, INPUT);//按鈕的
```

首先相關參數設定， 步進馬達、WIFI 連線帳號密碼、 LED 燈、按鈕的腳位

```
42      stepper.setSpeed(30); // 將馬達的速度設定成20RPM（太大趕不上）
43      init_wifi();  //設定Serial,改變模式,連線wifi
44  }
45  //=================== loop ====================
46  void loop() {
47
48      isLockOpen  = getSwitchData();
49      Serial.println("isLockOpen = "+isLockOpen);
50      delay(800);
51      isDoorOpen=RdFinderM();
52      Serial.println("isDoorOpen = "+String(isDoorOpen));
53      delay(800);
54      while(isLockOpen=="1" && isDoorOpen==0){
55        isDoorOpen=RdFinderM();
56        Serial.println("isDoorOpen = "+String(isDoorOpen));
57            if(isDoorOpen==0){
58              isLockOpen  = getSwitchData();
```

getSwitchData()為 DataBase 上面與手機 APP 的鎖是否打開

RdFinderM()為紅外線所偵測門是否打開

getSwitchData()[此稱鎖]與 RdFinderM()[此稱為門]總共會發生四種情況:

case:	getSwitchData()	RdFinderM()	Status
1	O	O	正常開門情形
2	O	X	鎖是開的、門未關
3	X	O	鎖是關的、門是開的
4	X	X	正常關門情形

Case1:

正常開門步驟

Case2:

鎖是開的、門未關，可能情況為(a)使用者忘記鎖門

(b)使用者還未察覺到鎖已開的

處理動作:提示燈閃爍 讓使用者知道目前狀態

Case3:

鎖是關的、門是開的，可能情況為遭人強行闖入，即遭小偷

處理動作:警示燈 及 提示燈 閃爍讓使用者知道目前狀態

Case4:

正常關門情形

```
                if(time ==2 ){
                  //update Switch ;
                time = 0;
                isLockOpen = "0";
                updateSwitchData(isLockOpen,isDoorOpen);
                // Serial.println("isLockOpen = "+isLockOpen);
                // checkSwithData2Tool(isLockOpen,isDoorOpen);
                }
            }
            // Serial.println("time = "+String(time));
            time++;
        }
    while(isDoorOpen == 1 ){
      if(isStart==0){
        uploadData(isDoorOpen,btnStatus);
      }
      if(isLockOpen == "1"){
        time = 0 ;
        flash();
        isStart =1;
        isDoorOpen=RdFinderM();
        }else if(isLockOpen=="0"){
        flash();
        isStart =1;
        digitalWrite(8,HIGH);
        isDoorOpen=RdFinderM();
        }

    }

    btnStatus = (int)digitalRead(2);
    if(btnStatus){
      btnStatus = 1;
      uploadData(isDoorOpen,btnStatus);
    }
    delay(1000);
}
  /*
 *  Setting Serial
*/
void init wifi(){
```

```
100     Serial.println("=====================================");
101     Serial.println("|---  Serial Setting  ---|\n");
102     sendCommand("AT+RST",5000); // reset module
103     sendCommand("AT+CWMODE=1",2000); // configure as access point
104     sendCommand("AT+CWJAP=\""+SID+"\",\""+PWD+"\"",5000);
105     sendCommand("AT+CIPMUX=0",2000); // configure for single connections
106     Serial.println("\n|---  Setting Finish  ---|");
107     Serial.println("=====================================");
108   }
109
110   /*
111    *  Setting Serial (Send Command)
112   */
```

54 行->88 行

當鎖開 門未開 -->檢查門是否被打開

門未被打開，即 Case2，此時判斷這個狀態是否超過兩秒，是的話即鎖上門，不是則持續亮提示燈 。

當鎖開 門也開，此時修改 DataBase Lock-欄位為 1

88 行->93 行

按鈕被按下即 DataBase 資料新增一筆

100 行->108 行

Wifi 相關參數設定

```
113  void sendCommand(String command, const int timeout)
114  {
115      String response = "";
116      Serial.println(command); // send the read character to the Serial
117      long int time = millis();
118      while( (time+timeout) > millis())
119      {
120        while(Serial.available())
121        {
122          // The esp has data so display its output to the serial window
123          response = Serial.readString(); // read the next character.
124        }
125      }
126      //Serial.println(response);
127      delay(100);
128  }
129
130
131  String catch_word(String pageread){
132    //read the page, and capture & return everything between '<' and '>'
133    stringPos = 0;
134    memset( &inString, 0, 32 ); //clear inString memory
135    int i ;
136    for(i = 0;i < pageread.length() ; i++){
137        char c = pageread.c_str()[i];
138        if (c == '^' ) { //'<' is our begining character
139          startRead = true; //Ready to start reading the part
140        }else if(startRead){
141          if(c != '!'){ //'>' is our ending character
142            inString[stringPos] = c;
143            stringPos ++;
144          }else{
145            //got what we need here! We can disconnect now
146            startRead = false;
147            return inString;
148          }
149        }
150      }
151  }
152  //================================================
153  /*
```

sendCommand():用來傳 command 給 wifi，且回傳 wifi 的回應

```
154   TCP Connect
155  */
156  void TCPconnect()
157  {
158     // TCP connection
159    String cmd ="";
160    cmd = "AT+CIPSTART=\"TCP\",\"";
161    cmd += IP; //host
162    cmd += "\",80";
163    Serial.println(cmd);
164
165    delay(1000);
166  }
```

TCPconnect():TCP 連線相關協定

```
/*
  上傳資料去mysql
*/
void uploadData(int isDoorOpen,int btnstatus)
{
  TCPconnect();
  String getStr = "GET /"+doorfile+"?status=";
  getStr += isDoorOpen;
  getStr += "&btnstatus=";
  getStr += btnstatus;
  getStr +=" HTTP/1.1\r\nHost:"+IP+":80";
  getStr += "\r\n\r\n";

  // send data length
  String cmd ="";
  cmd = "AT+CIPSEND=";
  cmd += String(getStr.length());
  Serial.println(cmd);

  if(Serial.find(">")){
    Serial.print(getStr);
  }
  else{
    // alert user
    Serial.println("AT+CIPCLOSE");
  }
  delay(2000);
}
/*
  從mysql 獲取資料
*/
void updateSwitchData(String isLockOpen,int isDoorOpen){
  TCPconnect();
  String getStr = "GET /"+lockupdatefile+"?status=";
  getStr += isLockOpen;
  getStr +=" HTTP/1.1\r\nHost:"+IP+":80";
  getStr += "\r\n\r\n";

  // send data length
  String cmd ="";
  cmd = "AT+CIPSEND=";
```

uploadData():透過 get 將所要更新按鈕的數據傳給 doorfile 的 PHP 檔案藉由它更新資料庫數據

updateSwitchData():透過 get 將所要更新鎖的狀態傳給 lockupdatefile 的 PHP 檔案藉由它更新資料庫數據

```
208   cmd += String(getStr.length());
209   Serial.println(cmd);
210
211   if(Serial.find(">")){
212     Serial.print(getStr);
213   }
214   else{
215     // alert user
216     Serial.println("AT+CIPCLOSE");
217   }
218   delay(1000);
219 }
```

```
220 String getSwitchData(){
221   TCPconnect();
222   String resp="",ans="";
223   int rdfinder=0;
224   // prepare GET string
225   String getStr = "GET /"+lockfile;
226   getStr +=" HTTP/1.1\r\nHost:"+IP+":80";
227   getStr += "\r\n\r\n";
228   // send data length
229   String cmd ="";
230   cmd = "AT+CIPSEND=";
231   cmd += String(getStr.length());
232   Serial.println(cmd);
233
234   if(Serial.find(">")){
235     Serial.print(getStr);
236     while(Serial.available())
237       {
238         // The esp has data so display its output to the serial window
239         resp = Serial.readString(); // read the next character.
240       }
241     ans = catch_word(resp);
242     rdfinder= RdFinderM();
243     checkSwithData2Tool(ans,rdfinder);
244     return ans;
245   }
246   else{
247      Serial.println("AT+CIPCLOSE");
248      //init_wifi();
249   }
250     delay(1000);
251 }
252
253 void checkSwithData2Tool(String lock,int rdFinder){
254    int motor=0;
255    if(count == 0 && lock == "1" && rdFinder==0){
256       Serial.println("switch on");
257       count =1;
258       motor=540;
259        stepper.step(motor);
260    }else if(count == 1 && lock == "0"&& rdFinder == 0){
```

getSwitchData():透過 lockfile.php 將 DataBase 當下 lock 欄位的值讀出來

```
261         Serial.println("switch off");
262         motor=-540;
263         count =0 ;
264          stepper.step(motor);
265       }
266       // motorM(motor);
267   }
268
```

checkSwitchData2Tool():用來判斷馬達要開啟鎖，還是要關上鎖

Count 此為紀錄馬達現在位置，1 為打開狀態，0 為反之

開啟鎖的條件為 DataBase-lock 為 1(即 APP 打開鎖)，且門是關，且 count=0 馬達處於關閉狀態，

關閉鎖的條件為 DataBase-lock 為 0(即 APP 打開鎖)，且門是開，且 count=0 馬達處於開啟狀態，

```
void checkLock(){

}
//=================tools method ============
void motorM(int value){
  Serial.println("Motor");
  if(value!=d){
    Serial.println("open");
    stepper.step(value);//轉動
  }else if(value ==d){
    stepper.step(0);
    Serial.println("dont open");
  }
  d = value;
    delay(1000);
}

void flash(){
  for(int i=0; i<2; i++){
    digitalWrite(LED,HIGH);
    delay(250);
    digitalWrite(LED,LOW);
    delay(250);
  }

}

int RdFinderM(){
    int tmp,isOpen;
    tmp = analogRead(A0);   //A0為紅外線距模組數刻輸入口
    // Serial.println(tmp);
    if(tmp < 300  ){
        isOpen=1;
    } else {
        isOpen=0;
        isStart=0;
        digitalWrite(8, LOW);
    }
    delay(500);
return isOpen;
}
```

motorM():判斷馬達是否要轉動，為第 2 次判斷要不要轉動

主要為了要打開鎖時確認馬達現在狀態是否在於 未啟動狀態。

關閉鎖時確認馬達現在狀態是否在於 啟動狀態。

Flash():

提示燈閃爍

RdFinderM():

判斷門是否為開啟狀態，如果紅外線所讀到值<300(mm)即判斷為打開狀態

反之為關閉。

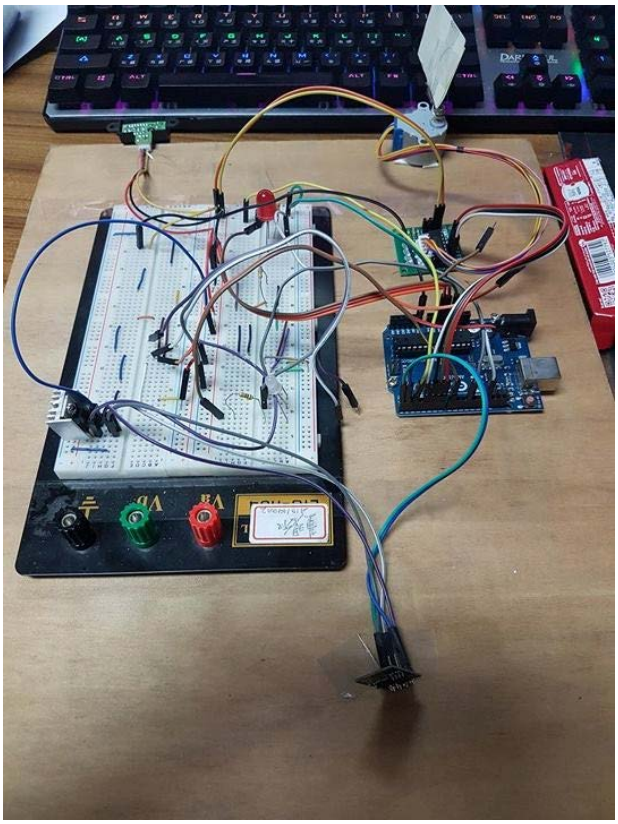
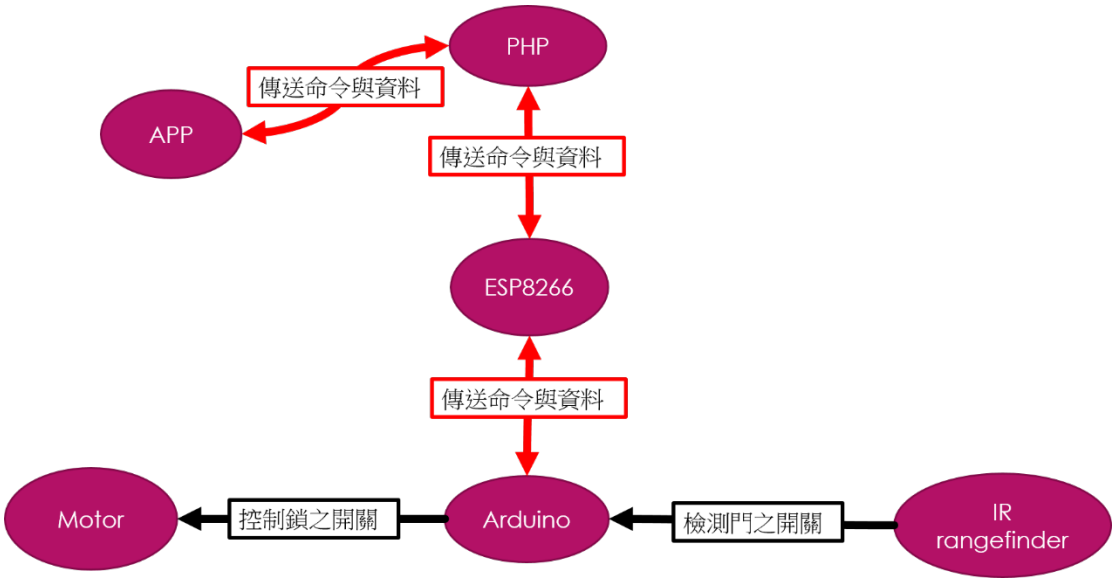


圖 4 Arduino 模組整合實體照片

開發流程圖



PHP + MySQL：

從 Arduino 傳值去 MySQL 如圖 B

lock_update.php | lock_check.php | door_receive.php

```php
<?php

  $doorstatus = $_GET['status'];
  $btnstatus = $_GET['btnstatus'];


  //user information
  $host = "140.120.101.95";
  $user = "test123";
  $pass = "test123";

  //database information
  $databaseName = "iot";
  $tableName = "door";


  //Connect to mysql database
  $con = mysql_connect($host,$user,$pass);
  $dbs = mysql_select_db($databaseName, $con);


  //Query database for data
    $result = mysql_query("insert into $tableName (status,btn) VALUES ($
      doorstatus,$btnstatus)");

  //store matrix
  if($result==1)
    echo "success";
  else
    echo "error";
?>
```

iot.door: 89 總記錄 (大約)　下一個　顯示所有

time	status	btn
2017-01-07 21:10:28	0	1
2017-01-07 21:57:41	1	0
2017-01-07 21:58:25	1	0
2017-01-07 21:58:50	1	0
2017-01-07 22:09:20	1	0
2017-01-07 22:10:04	1	0
2017-01-07 22:21:02	1	0
2017-01-07 22:41:04	1	0

圖 B

從 arduino 收到的資訊中，透過 PHP，insert into DataBase

lock_update.php | lock_check.php | door_receive.php

```php
<?php
        //user information
        $host = "140.120.101.95";
        $user = "test123";
        $pass = "test123";

        //database information
        $databaseName = "iot";
        $tableName = "locker";

        //Connect to mysql database
        $con = mysql_connect($host,$user,$pass);
        $dbs = mysql_select_db($databaseName, $con);

      //Query database for data
        $search=mysql_query("SELECT status FROM $tableName where id = 1 "); //
        check 目前狀態是關or開
        $result=mysql_fetch_row($search);

        if ($result[0] == 1){
           echo "^1!";
        }else{
           echo "^0!";
        }

?>
```

從 MySQL 取得 locker status field 的值

lock_update.php | lock_check.php | door_receive.php

```php
<?php

        $lockstatus = $_GET['status'];
        //user information
        $host = "140.120.101.95";
        $user = "test123";
        $pass = "test123";

        //database information
        $databaseName = "iot";
        $tableName = "locker";

        //Connect to mysql database
        $con = mysql_connect($host,$user,$pass);
        $dbs = mysql_select_db($databaseName, $con);

      //Query database for data
        $result=mysql_query("UPDATE  $tableName SET $tableName.`status` =$
           lockstatus  where id = 1 "); //check 目前狀態是關or開

        if($result==1)
         echo "success";
        else
         echo "error";
?>
```

iot.locker: 2 總記錄 (大約)

status	id
0	1
0	2

圖 A

從 Arduino 傳值去 MySQL ,使 locker status 值更新 如圖 A

APP 介面

圖 APP.1 Login View

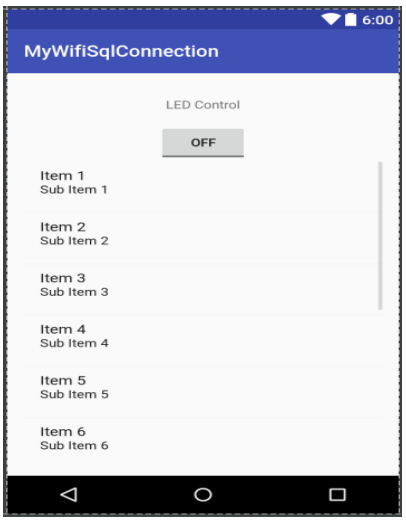


圖 APP.2 Control View

Android Java 程式

MainActivity

```java
public class MainActivity extends AppCompatActivity {

    public static final int CONNECTION_TIMEOUT = 10000;
    public static final int READ_TIMEOUT = 15000;
    private EditText etName ,etPwd ;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        findviewbyID();
    }
    public void findviewbyID(){
        etName =(EditText)findViewById(R.id.editText);
        etPwd =(EditText)findViewById(R.id.editText2);
    }
    public void onCheckLogin(View view){
        final String textName = etName.getText().toString();
        final String textPwd = etPwd.getText().toString();

        new AsyncLogin(this).execute(textName, textPwd);
    }
```

SuccessActivity

當登入成功時,進入

```java
public class SuccessActivity extends AppCompatActivity {

    String myJSON;
    public static final int READ_TIMEOUT = 15000;
    public static final int CONNECTION_TIMEOUT = 10000;
    private static final String TAG_CONTENT = "content";
    private static final String TAG_TIME = "time";
    private static final String TAG_STATUS = "status";
    private static final String TAG_BTN = "btn";

    JSONArray door = null;
    ArrayList<HashMap<String, String>> doorList;
    ArrayList<String[]> chartList;
    ListView list;
//    BarChart chart;
//    Switch switchBtn;
    ToggleButton tglBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_success);
        findview();
        new AsyncValue(this).execute();
    }

    public void findview()
    {
        list = (ListView) findViewById(R.id.jsonView);
//        chart = (BarChart) findViewById(R.id.chart);
//        switchBtn = (Switch) findViewById(R.id.switchBtn);
        tglBtn= (ToggleButton) findViewById(R.id.toggleButton);
//        switchBtn.setChecked(false) ;
        tglBtn.setChecked(false);
        doorList = new ArrayList<HashMap<String, String>>();
//        chartList = new ArrayList<String[]>();
    }
    public void setSwitchBtnStatus(View view)
    {
        boolean on = ((ToggleButton)view).isChecked();
        if (on){
            new AsyncStatus(this).execute("1");
        }else{
            new AsyncStatus(this).execute("0");
        }
        showList();
    }
    public void setMyJSON(String json)
    {
        this.myJSON = json;
    }
```

```java
    protected void showList() {
        try {
            JSONObject jsonObject = new JSONObject(myJSON);
//            JSONArray jsonArr =jsonObject.getJSONArray(this.TAG_CONTENT);
            door = jsonObject.getJSONArray(this.TAG_CONTENT);
//            jsonArr =light;
            for (int i = 0; i < door.length(); i++) {
                String[] arr = new String[2];
                JSONObject c = door.getJSONObject(i);
                String id = c.getString(this.TAG_TIME);
                String value = c.getString(this.TAG_STATUS);
                String time = c.getString(this.TAG_BTN);
                HashMap<String, String> door = new HashMap<String, String>();
                door.put(this.TAG_TIME, id);
                door.put(this.TAG_STATUS, value);
                door.put(this.TAG_BTN, time);
                arr[0] = value;
                arr[1] = id;
                doorList.add(door);
//                chartList.add(arr);
            }
            ListAdapter adapter = new SimpleAdapter(SuccessActivity.this, doorList, R.layout.list_item,
            new String[]{TAG_TIME, TAG_STATUS, TAG_BTN}, new int[]{R.id.Time, R.id.Status, R.id.btn});

            list.setAdapter(adapter);

        } catch (JSONException e) {
            e.printStackTrace();
        }
    }
}
```

登入程式碼

```
public class AsyncLogin extends AsyncTask<String,String,String> {
    MainActivity mainActivity;
    ProgressDialog pdLoading;
    private URL url=null;
    private HttpURLConnection conn;

    public AsyncLogin(MainActivity mainActivity) {
        this.mainActivity = mainActivity;
        pdLoading = new ProgressDialog(mainActivity);
    }
    @Override
    protected void onPreExecute() {
        super.onPreExecute();
//        執行前的準備工作
        pdLoading.setMessage("\tLoading....");
        pdLoading.setCancelable(false);
        pdLoading.show();
    }
    @Override
    protected String doInBackground(String... params) {
        try {
            url = new URL("http://140.120.101.95/appControl/login.php");
        } catch (MalformedURLException e) {
            e.printStackTrace();
        }
        try {
            conn = (HttpURLConnection) url.openConnection();
            conn.setReadTimeout(this.mainActivity.READ_TIMEOUT);
            conn.setConnectTimeout(this.mainActivity.CONNECTION_TIMEOUT);
            conn.setRequestMethod("POST");

            //setDoInput and setDoOuput method depict handling of both send and receive
            conn.setDoInput(true);
            conn.setDoOutput(true);

            Uri.Builder builder = new Uri.Builder().appendQueryParameter("username",
                    params[0]).appendQueryParameter("password", params[1]);

            String query = builder.build().getEncodedQuery();

            //Open connection for sending data
            OutputStream os = conn.getOutputStream();
            BufferedWriter writer = new BufferedWriter(new OutputStreamWriter(os, "UTF-8"));

            writer.write(query);
            writer.flush();
            writer.close();
            os.close();
            conn.connect();
        } catch (IOException e) {
            e.printStackTrace();
        }
        try {
```

```
            int response_code = conn.getResponseCode();

            //Check if successful connection made
            if (response_code == HttpURLConnection.HTTP_OK) {
                InputStream input = conn.getInputStream();
                BufferedReader reader = new BufferedReader(new InputStreamReader(input));
                StringBuilder result = new StringBuilder();
                String line;

                while ((line = reader.readLine()) != null) {
                    result.append(line);
                }

                //Pass Data to onPostExecute method
                return (result.toString());
            } else {
                return ("unsuccessful");
            }
        } catch (IOException e) {
            e.printStackTrace();
            return ("exception");
        } finally {
            conn.disconnect();
        }
    }
    protected  void onPostExecute(String result){
        pdLoading.dismiss();

        if (result.equalsIgnoreCase("true")) {
            Intent intent = new Intent(this.mainActivity, SuccessActivity.class);
            this.mainActivity.startActivity(intent);
            this.mainActivity.finish();
        } else if (result.equalsIgnoreCase("false")) {
            Toast.makeText(this.mainActivity, "Invalid name or password", Toast.LENGTH_LONG).show();
        } else if (result.equalsIgnoreCase("exception")) {
            Toast.makeText(this.mainActivity, "OOPs Something went wrong. Connection Problem.",
                    Toast.LENGTH_LONG).show();
        } else if (result.equalsIgnoreCase("unsuccessful")) {
            Toast.makeText(this.mainActivity, "Connection Error.", Toast.LENGTH_LONG).show();
        }
    }
}
```

獲得 Mysql Value 原始碼

```
public class AsyncValue extends AsyncTask<String,String ,String> {
    private SuccessActivity successActivity;
    private URL url;
    private HttpURLConnection conn;
    public AsyncValue(SuccessActivity successActivity){
        this.successActivity = successActivity;
    }
    @Override
    protected String doInBackground(String... params) {
        try {
            url = new URL("http://140.120.101.95/appControl/getValue.php");
        } catch (MalformedURLException e) {
            e.printStackTrace();
            return "URL Exception";
        }
        try {
            conn = (HttpURLConnection) url.openConnection();
            conn.setReadTimeout(this.successActivity.READ_TIMEOUT);
            conn.setConnectTimeout(this.successActivity.CONNECTION_TIMEOUT);
            conn.connect();
        } catch (IOException e) {
            e.printStackTrace();
            return  "Connection Exception";
        }
        try {
            int response_code = conn.getResponseCode();
            if(response_code == HttpURLConnection.HTTP_OK){
                InputStream input = conn.getInputStream();
                BufferedReader reader = new BufferedReader(new InputStreamReader(input));
                StringBuilder result = new StringBuilder();
                String line;
                while ((line = reader.readLine()) != null){
                    result.append(line + "\n@!#");
                }
                return(result.toString());
            } else{
                return("unsuccessful");
            }
        } catch (IOException e) {
            e.printStackTrace();
            return "Get Value Exception";
        } finally {
            conn.disconnect();
        }
    }
    @Override
    protected void onPostExecute(String result) {
        //Toast.makeText(this.successActivity, result, Toast.LENGTH_LONG).show();
        this.successActivity.setMyJSON(result);
        this.successActivity.showList();
//        this.successActivity.chartCreate();
    }
}
```

控制門鎖的狀態原始碼

```
public class AsyncStatus extends AsyncTask<String ,String ,String > {
    private SuccessActivity successAcitivity;
    private ProgressDialog pdLoading;
    private HttpURLConnection conn;
    private URL url;
    public AsyncStatus(SuccessActivity successAcitivity){
        this.successAcitivity = successAcitivity;
        this.pdLoading = new ProgressDialog(successAcitivity);
    }
    @Override
    protected void onPreExecute() {
        super.onPreExecute();
        pdLoading.setMessage("\t Change LED Light Status");
        pdLoading.setCancelable(false);
        pdLoading.show();
    }
    @Override
    protected String doInBackground(String... params) {
        try {
            url = new URL("http://140.120.101.95/appControl/control.php");
        } catch (MalformedURLException e) {
            e.printStackTrace();
        }
        try {
            conn = (HttpURLConnection) url.openConnection();
            conn.setConnectTimeout(this.successAcitivity.CONNECTION_TIMEOUT);
            conn.setReadTimeout(this.successAcitivity.READ_TIMEOUT);
            conn.setRequestMethod("POST");
            conn.setDoInput(true);
            conn.setDoOutput(true);
            Uri.Builder builder = new Uri.Builder().appendQueryParameter("lockStatus", params[0]);
            String query = builder.build().getEncodedQuery();
            OutputStream os = conn.getOutputStream();
            BufferedWriter writer = new BufferedWriter(new OutputStreamWriter(os, "UTF-8"));
            writer.write(query);
            writer.flush();
            writer.close();
            os.close();
            conn.connect();
        } catch (IOException e) {
            e.printStackTrace();
        }
        try {
            int response_code = conn.getResponseCode();
            if(response_code == HttpURLConnection.HTTP_OK){
                return ("successful");
            }
            else{
                return ("unsuccessful");
            }
        } catch (IOException e) {
            e.printStackTrace();
            return ("exception");
```

```
        } finally {
            conn.disconnect();
        }
    }
    @Override
    protected void onPostExecute(String s) {
        pdLoading.dismiss();
        if(s.equalsIgnoreCase("successful")){
            Toast.makeText(this.successAcitivity, "Change Mode Success", Toast.LENGTH_LONG).show();
        } else if(s.equalsIgnoreCase("unsuccessful") || s.equalsIgnoreCase("exception")){
            Toast.makeText(this.successAcitivity, "Invalid Value", Toast.LENGTH_LONG).show();
        }
    }
}
```